

REMARKS

The comments of the applicant below are each preceded by related comments of the examiner (in small, bold type).

8. Claims 16 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The applicant acknowledges that the examiner indicated that claims 16 and 17 would be allowable. The applicant contends that the other claims are also patentable for the reasons discussed below.

2. Claims 8, 13-15 and 21 are rejected under 35 U.S.C. 102(b) as being anticipated by WolterUS2,759,106.

In regard to claim 8, Wolter teaches (see Figures 1, 3) an apparatus comprising a first reflective surface (E) to reflect light rays emanating from a point (F), the first reflective surface having a curvature such that substantially all of the reflected light rays propagate at a first angle relative to an axis that passes through the point and converge towards a region to produce uniform illumination at the region as shown in Figures 1a and 3a and as described in column 2, lines 26-38.

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In regard to claim 21, Wolter teaches (see Figures 1a, 3a) a method comprising generating light rays from a location (F) on an optical axis; reflecting the light rays with a first reflective surface (E) having a curvature such that substantially all of the reflected light rays propagate with a first convergence angle relative to the optical axis, the light rays converging toward a region to produce uniform illumination at the region as shown in Figures 1a and 3a and as described in column 2, lines 26-38.

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3. Claims 8, 11-15 and 21-26 are rejected under 35 U.S.C. 102(e) as being anticipated by Vasylyev et al US 6,620,995.

In regard to claim 8, Vasylyev et al teaches (see Figures 1, 5, 6) an apparatus comprising a first reflective surface (18) to reflect light rays emanating from a point, the first reflective surface having a curvature such that substantially all of the reflected light rays propagate at a first angle relative to an axis (24) that passes through the point and converge towards a region to produce uniform illumination at the region as shown in Figures 1 and 5 and as described in column 3, lines 51-67 and column 4, lines 1-24.

Wolter does not disclose and would not have suggested a reflective surface having a curvature such that "substantially all of the reflected light rays propagate at a first angle relative to an axis that passes through the point," as recited in claim 8.

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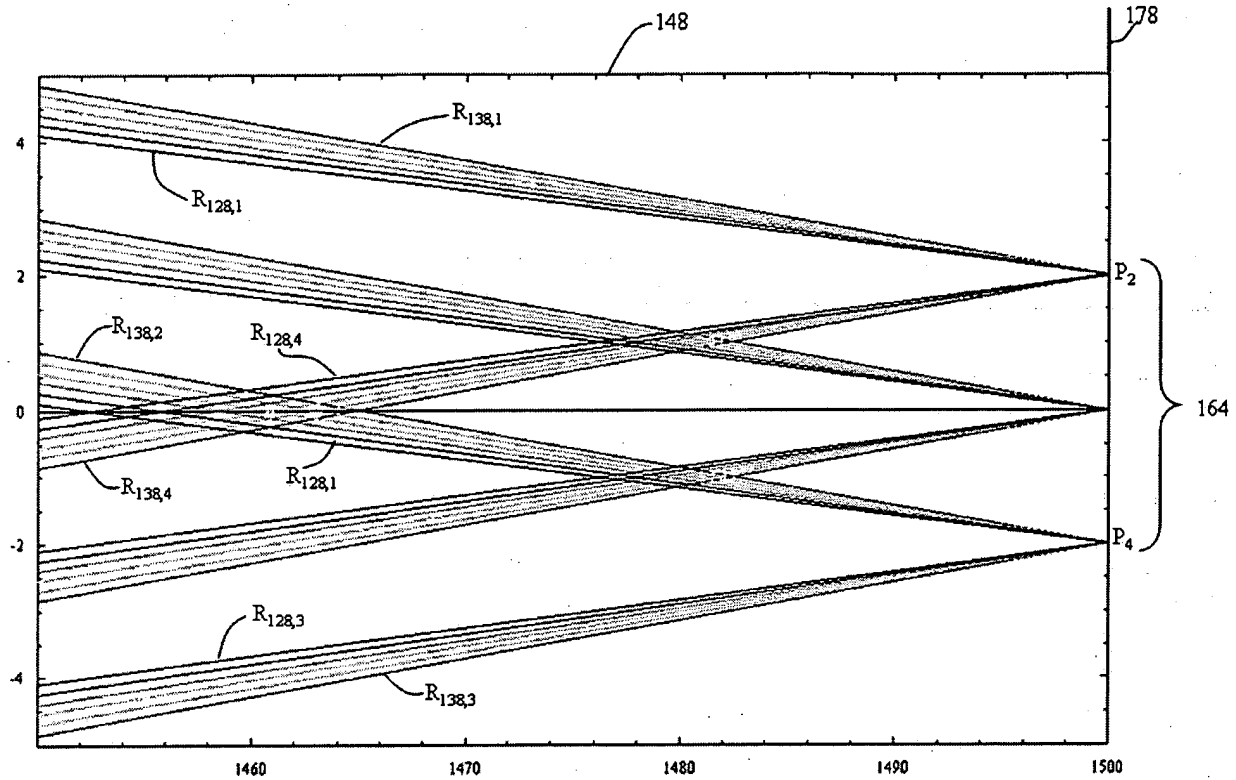
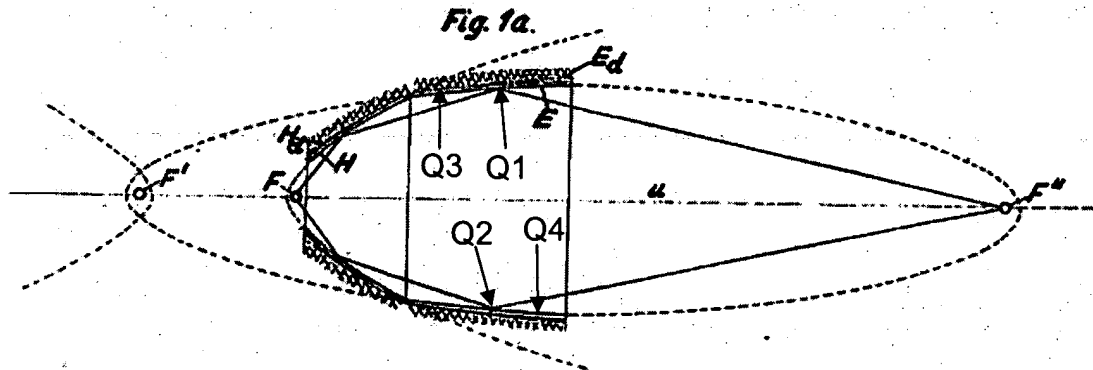


FIG. 4

For example, as shown in FIGS. 3 and 4 (reproduced above) and described in paragraph [0014] of the applicant's specification, a reflective surface 153 includes portions 154 and 156. Light rays (e.g., $R_{138,1}$ and $R_{138,2}$) that are reflected by the portion 154, and light rays (e.g., $R_{138,3}$ and $R_{138,4}$) that are reflected by the portion 156 propagate at a first angle relative to an optical axis 126 and converge towards a region 164. In FIG. 4, the lines that are at different angles relative to the optical axis are reflected by different reflective surfaces.

Wolter discloses the use of an ellipsoid E to project light rays from a point F to a point F" (col. 2, lines 21-35 and Fig. 1a, reproduced below with annotations). When the light rays are focused to the point F", not substantially all of the reflected light rays propagate "at a first angle" relative to an axis. For example, although light rays reflected from points Q1 and Q2 converge to the point F" at the same angle relative to an axis, light rays reflected from points Q1, Q3, and Q4 converge to the point F" at different angles relative to the axis. Thus, Wolter does not

disclose and would not have suggested a reflective surface having a curvature such that “substantially all of the reflected light rays propagate at a first angle relative to an axis,” as recited in claim 8.



What is missing in Wolter is also not disclosed or suggested in Vasylyev, which discloses a concentrator having a set of nested, ring-like concave reflective elements that reflect radiant energy to a common focal region on a receiver. (Abstract) As can be seen in FIGS. 5 and 6 of Vasylyev, each ring-like concave reflective element of Wolter does not have a curvature such that “substantially all of the reflected light rays propagate at a first angle relative to an axis.” Rather, the rays are focused to the common focal region with different convergence angles.

Claims 21 and 24 are patentable for at least similar reasons as claim 8.

In regard to claim 13, Wolter teaches (see Figures 1a, 3a) an apparatus comprising a reflective surface (E) positioned relative to an optical axis to reflect light rays emanating from a location on the optical axis (F) so that the light rays converge towards a region on a plane perpendicular to the optical axis, the reflective surface having a curve segment that comprises a section of a parabolic curve having a focal point at the location and rotated an angle relative to the optical axis as described in column 2, lines 26-38.

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In regard to claim 13, Vasylyev et al teaches (see Figures 1, 5, 6) an apparatus comprising a reflective surface (18) positioned relative to an optical axis to reflect light rays emanating from a location on the optical axis (24) so that the light rays converge towards a region on a plane perpendicular to the optical axis, the reflective surface having a curve segment that comprises a section of a parabolic curve having a focal point at the location and rotated an angle relative to the optical axis as described in column 3, lines 51-67 and column 4, lines 1-24.

Wolter does not disclose and would not have suggested a reflective surface having a curve segment that comprises a section of a parabolic curve that "has been rotated through an angle relative to the optical axis about an axis of rotation that is non-parallel to the optical axis," as recited in amended claim 13.

The examiner points to figures 1a and 3a, and column 2, lines 26-38 of Wolter as disclosing the limitations of claim 13. The sections of Wolter cited by the examiner disclose the use of a paraboloid reflective surface to reflect light rays. A paraboloid reflective surface is formed by rotating a parabolic curve about an optical axis. Wolter does not disclose or suggest that the paraboloid reflective surface has a curve segment that includes a section of a parabolic curve that has been rotated through an angle relative to the optical axis about an axis of rotation that is non-parallel to the optical axis.

What is missing in Wolter is also not disclosed or suggested in Vasylyev. The examiner points to figures 1, 5, and 6, column 3, lines 51-67, and column 4, lines 1-24 of Vasylyev as disclosing the limitations of claim 13. The sections of Vasylyev cited by the examiner disclose the use of a plurality of coaxial ring-like elements having inner reflective surfaces to reflect light rays, but does not disclose or suggest that the reflective surfaces have a curve segment that includes a section of a parabolic curve that has been rotated through an angle relative to the optical axis about an axis of rotation that is non-parallel to the optical axis.

All of the dependent claims are patentable for at least the reasons for which the claims on which they depend are patentable.

Any circumstance in which the applicant has addressed certain comments of the examiner does not mean that the applicant concedes other comments of the examiner. Any circumstance in which the applicant has made arguments for the patentability of some claims does not mean that there are not other good reasons for patentability of those claims and other claims. Any circumstance in which the applicant has amended or canceled a claim does not mean that the applicant concedes any of the examiner's positions with respect to that claim or other claims.

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No fee is believed to be due. Please apply any charges or credits to deposit
account 06-1050.

Respectfully submitted,

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